

THREAT / HAZARD / RISK

CASSELTON ND TRAIN DERAILMENT

12/30-31/2013



- ▶ Concept of operations
 - ▶ Preparedness
 - ▶ Response
 - ▶ Recovery
 - ▶ Direction and Control
 - ▶ Roles and Responsibilities

POLICY DEVELOPMENT

- ▶ Three summer training exercises
 - ▶ Train derailment / pipeline breach
 - ▶ Train derailment
 - ▶ Train derailment Table-top

EXERCISE / TRAINING



IT WAS A CALM, COLD WINTER DAY

- ▶ ¼ mile west of Casselton ND, 2500 residents
- ▶ ¼ mile east of large ethanol plant
- ▶ Adjacent to city reservoir / park

LOCATION

A series of three parallel white diagonal lines extending from the bottom right corner towards the center of the slide.

- ▶ Volunteer
- ▶ One station
- ▶ 28 firefighters
- ▶ 0 paid firefighters
- ▶ All trained to NFPA 472 Awareness Level Certification
- ▶ Most trained to Operations level
- ▶ Regional Hazmat Team (Fargo Fire) are trained to the NFPA 472 Technician Level

CASSELTON FIRE DEPARTMENT

911 CALLS



- ▶ Grain car derailed near track switch.
- ▶ Approaching oil train struck grain car derailing locomotive and oil tank cars.
- ▶ 18 of 20 derailed cars ruptured.
- ▶ Breach of tank cars resulted in fire and explosion.
- ▶ 450,000 gallons of Bakken crude oil released.



“PERFECT STORM”

- ▶ Casselton Volunteer Fire Department
- ▶ Casselton Volunteer Ambulance
- ▶ Cass County Sheriff's Department
- ▶ FM Ambulance
- ▶ NDHP

1ST RESPONDERS

- ▶ Casselton Fire set up IC within eyesight of scene.
- ▶ Hot – zone pulled back to ½ mile
- ▶ Staging at Casselton School park lot

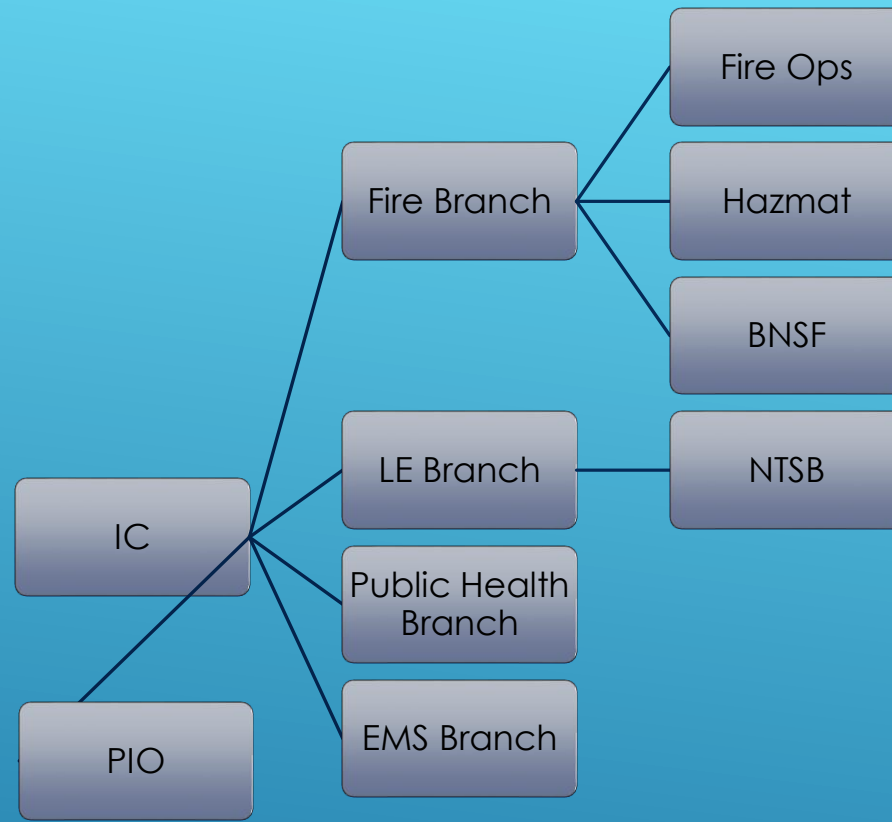


INCIDENT COMMAND CENTER

- ▶ Sheriff arrives – assumes IC from Fire Chief.
- ▶ ICC moved to Casselton School.
- ▶ PIO, County Administrator, Commission Chair, Casselton Mayor at ICC.



PHASE 2 – INCIDENT COMMAND



INCIDENT COMMAND STRUCTURE (ICS)

- ▶ Train car contents identified.
- ▶ Haz Chem risk identified.
- ▶ Fire fighting strategy determined.
- ▶ FAA flight restrictions imposed.
- ▶ BNSF activates response team
 - ▶ Texas, Alabama, Minnesota, Minot
 - ▶ Est. 12 hours to burn out
- ▶ Emergency declared by Commission Chair, Casselton Mayor.



SITUATION ASSESSMENT



- ▶ Shelter in Place advisory for Casselton residents 4:30 p.m.
- ▶ Hourly weather reports for wind shift
- ▶ Evacuation advisory by Mayor and Commission Chair for part of city 5:45 p.m.
- ▶ Evacuation area expanded to entire city and adjacent townships 7:24 p.m.

EVACUATION EVALUATION

- ▶ Media conference conducted – 6:45 p.m.
- ▶ SO activates two ERT teams - 7:10 p.m.
- ▶ BNSF hazmat team arrives - 8:56 p.m.
 - ▶ Firefighting strategy
- ▶ 67 % of Casselton residents evacuated
 - ▶ 19 residents at shelter / 2 pets
 - ▶ Castlewood Retirement Home self-evacuated

SITUATION UPDATE 12/30

- ▶ Environmental Health contractor from Little Rock arrives - 2:00 a.m. Air quality still poor.
- ▶ Demolition and removal of grain cars ongoing. 6-7 remaining. Low glow from burning tankers – 2:20 a.m.
- ▶ IC command meeting – 7:00 a.m.
- ▶ Oil tanker car removal begins - 2-3 still on fire.
- ▶ Casselton businesses advised by mayor to stay closed until noon

NEW DAY – 12/31/13

- ▶ Media conference at IC – 9:00 a.m.
- ▶ Agency head meeting – 2:00 p.m.
- ▶ Evacuation order lifted – 3:00 p.m.
- ▶ Demobilization of county assets – 5:00

FINAL ACTIONS

- ▶ US DOT predicts more than 200 crude and ethanol trains will derail over the next 20 years, including 10 in urban areas.
- ▶ At least one of these urban derailments could cause a catastrophic accident with deaths, injuries, damage, and clean-up costing \$6 billion

NATIONAL VIEW



**WHAT IF THIS HAD
HAPPENED IN AN
URBAN
ENVIRONMENT?**

- ▶ Light, sweet crude
- ▶ Flammable liquid and vapor
- ▶ Highly volatile



BAKKEN CRUDE

- ▶ Hydrogen sulfide – asphyxiation hazard
- ▶ Benzene – cancer hazard
- ▶ Hazardous byproducts of oil fire:
 - ▶ Carbon monoxide
 - ▶ Sulfur oxides
 - ▶ Nitrogen oxides
 - ▶ Smoke particles

HAZARDS TO RESPONDERS/RESIDENTS

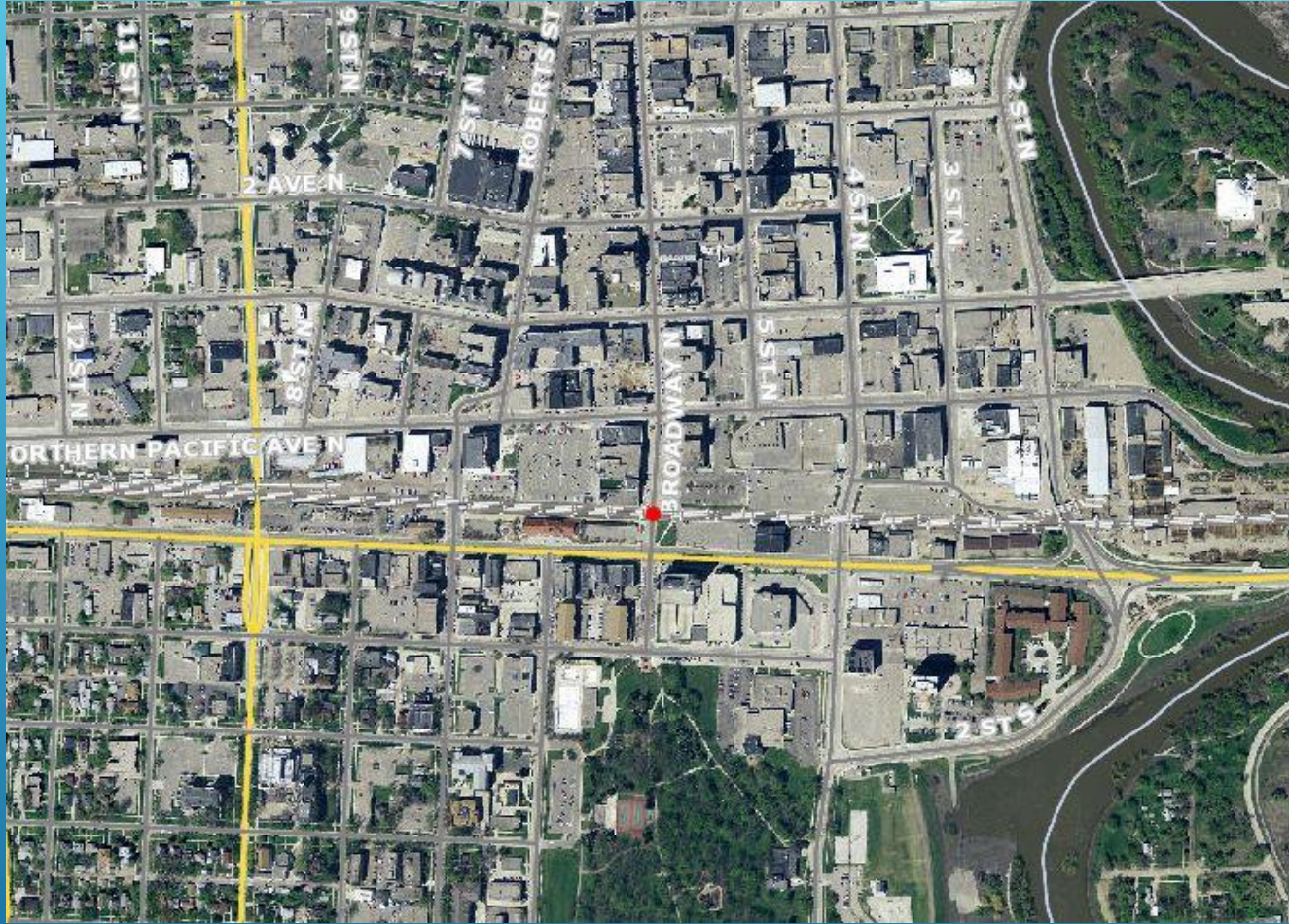
- ▶ Unattended runaway train
- ▶ Bakken Crude
- ▶ Entered town at 50-60 mph
- ▶ Derailed – 1.5 million gallons spilled
- ▶ 47 dead
- ▶ 30 buildings destroyed
- ▶ Est. \$1.2 billion



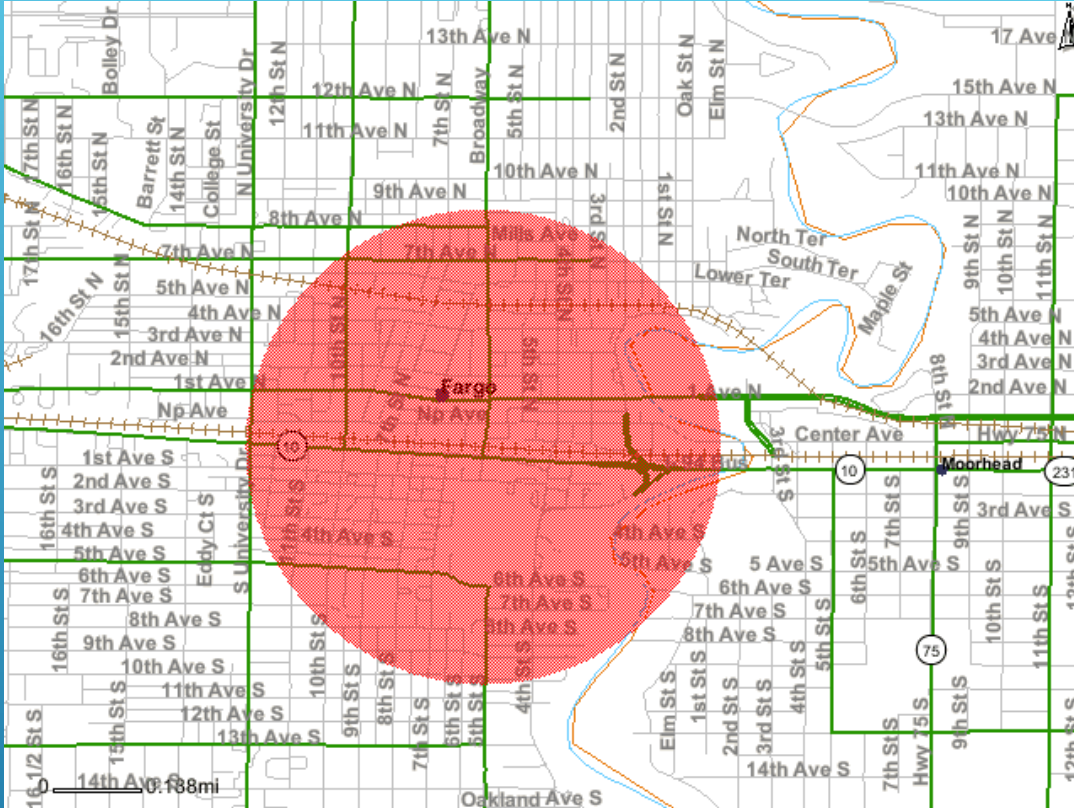
LAC MEGANTIC, QUEBEC – JULY 2013

- ▶ 4-6 explosions
- ▶ Heat felt up to 1.2 miles away
- ▶ “As blazing oil flowed over the ground it entered storm sewers, and emerged as huge fires from other storm sewer drains, manholes, even chimneys and basements of other buildings.”
- ▶ Fire blazed for 20 hours

LAC MEGANTIC

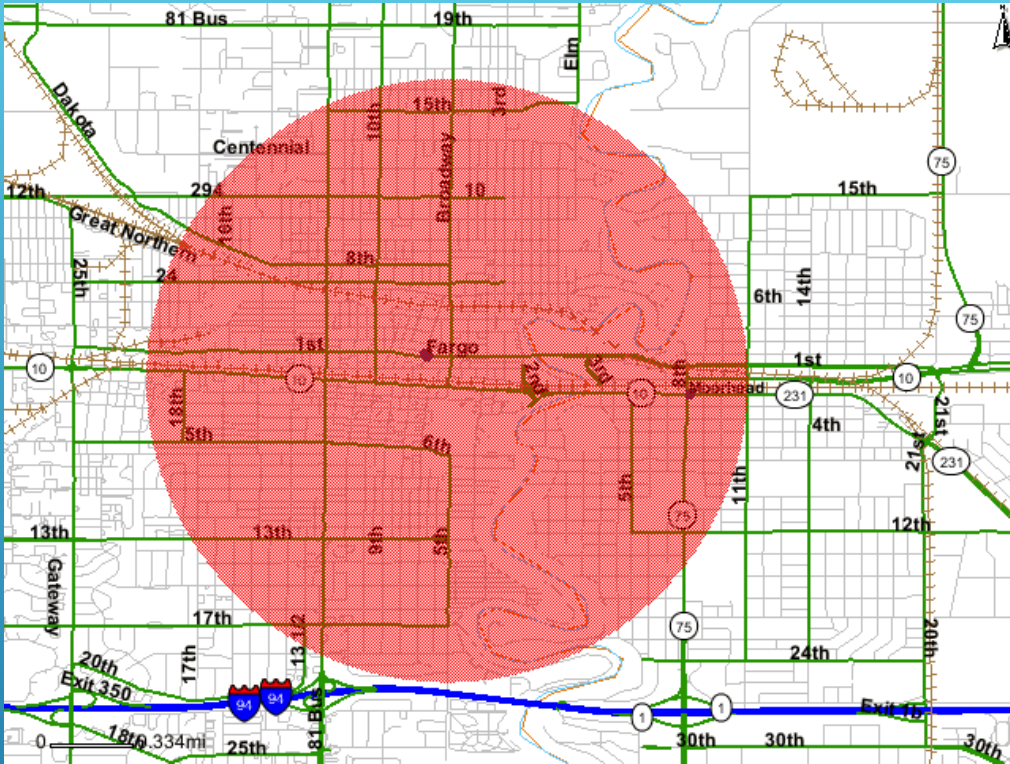


LOCATION – DOWNTOWN FARGO



- ▶ Danger of fire from extreme heat, fire spread by wind
- ▶ Potential victims
 - ▶ Injuries ?
 - ▶ Fatalities ?

HOT ZONE – ½ MILE RADIUS



- ▶ Up to 5,000 affected
- ▶ Dependent on wind direction
- ▶ Protect from toxic smoke

POTENTIAL SIP / EVACUATION ZONE –
UP TO 1.25 MILE RADIUS



LAC MEGANTIC DAMAGE AREA

- .6 mile blast radius
- Up to 20 blocks wide

- ▶ Major portion of downtown Fargo destroyed, damaged
- ▶ Many fatalities and injuries
- ▶ Several years to re-build / recover
- ▶ Cost estimate – hundreds of millions public / private



IMPACTS

- ▶ Planning
- ▶ Policy development
- ▶ Training and Exercise
- ▶ Train speed reduction
- ▶ Track inspection and maintenance
- ▶ Upgrade tank car safety
- ▶ Reduce volatility of oil



MITIGATION RECOMMENDATIONS

- ▶ Trains are derailling with alarming frequency.
- ▶ Tank cars cannot contain their loads when they come off the rails.
- ▶ Crude oil is more flammable and hazardous than originally estimated by industry and regulators.

INTERRELATED PROBLEMS



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